

Claims

1. A nucleic acid molecule encoding a polypeptide which is critical for survival and growth of the yeast Candida albicans and which nucleic acid molecule comprises any of the sequences of nucleotides in Sequence ID Numbers 1, 2, 3, 5, 10, 11, 12, 14, 16, 17, 18, 20, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 44, 45, 46, 49, 50, 52, 55, 57, 59, 61, 63, 65, 67, 70, 72, 74, 76, 78, 80, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 104, 106, 108, 110 and 113 or the sequences of nucleotides identified in Figures 9 to 13.

2. A nucleic acid molecule encoding a polypeptide which is critical for survival and growth of the yeast Candida albicans and which nucleic acid molecule comprises any of the sequences of nucleotides in Sequence ID Numbers 1, 2, 3, 5, 10, 11, 12, 14, 16, 17, 18, 46, 49, 50, 52, 55, 57, 59, 61, 63, 65, 87, 89, 91, 93, 95, 97, 99, 101, 104, 106, 108, and 110, or fragments or derivatives of said nucleic acid molecules.

3. A nucleic acid molecule encoding a polypeptide which is critical for survival and growth of the yeast Candida albicans and which nucleic acid molecule comprises any of the sequences of nucleotides in Sequence ID Numbers 20, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 45, 65, 70, 72, 74, 76, 78, 80, 81, 83, 85, 113, and fragments or derivatives of said nucleic acid molecules.

4. A nucleic acid molecule encoding a polypeptide which is critical for survival and growth of the yeast Candida albicans and which nucleic acid molecule comprises any of the sequences of nucleotides of sequence ID Nos 1 and 91.

5. A nucleic acid molecule encoding a polypeptide which is critical for survival and growth of the yeast *Candida albicans* and which polypeptide has an amino acid sequence according to the sequence of any of Sequence ID Numbers 4, 6 to 9, 13, 15, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 47, 48, 51, 53, 54, 56, 58, 62, 64, 66, 68, 69, 71, 73, 75, 77, 79, 82, 84, 86, 90, 92, 94, 96, 98, 100, 102, 103, 105, 107, 109, 111, 112, and 114 or the sequences identified in Figures 14 and 15.

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6. A nucleic acid molecule according to any one of claims 1 to 5 which is mRNA.

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7. A nucleic acid molecule according to any of claims 1 to 5 which is DNA.

8. A nucleic acid molecule according to claim 7 which is cDNA.

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9. A nucleic acid molecule capable of hybridising to the molecules according to any of claims 1 to 5 under high stringency conditions.

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10. A nucleic acid molecule according to claim 9 which is an antisense molecule.

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11. A polypeptide encoded by the nucleic acid molecule according to any of claims 1 to 8.

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12. A polypeptide which is critical for survival and growth of the yeast *Candida albicans* having the amino acid sequences of any of Sequence ID Numbers 4, 6 to 9, 13, 15, 19, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 43, 47, 48, 51, 53, 54, 56, 58, 60, 62, 64, 66, 68, 69, 71, 73, 75, 77, 79, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100, 102, 103, 105, 107, 109, 111, 112, and 114.

13. A polypeptide according to claim 12 having an amino acid sequence of any of Sequence ID Numbers 4, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 66, 68, 69, 71, 73, 75, 77, 79, 82, 84, 86 and 114.

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14. A polypeptide according to claim 12 having an amino acid sequence of any of Sequence ID Nos 43 or 92.

10 15. An expression vector comprising a nucleic acid molecule according to claim 7 or 8.

16. An expression vector according to claim 15 which comprises an inducible promoter.

15 17. An expression vector according to claim 15 or 16 which comprises a sequence encoding a reporter molecule.

20 18. A nucleic acid molecule according to any of claims 1 to 10 for use as a medicament.

19. Use of a nucleic acid molecule according to any of claims 1 to 10 in the preparation of a medicament for treating Candida albicans associated diseases.

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20. A polypeptide according to any of claims 11 to 14 for use as a medicament.

30 21. Use of a polypeptide according to any of claims 11 to 14 in the preparation of a medicament for treating Candida albicans associated infections.

35 22. A pharmaceutical composition comprising a nucleic acid molecule according to any of claims 1 to 10 or a polypeptide according to any of claims 11 to 14 together with a pharmaceutically acceptable carrier diluent or excipient therefor.

23. A *Candida albicans* cell comprising an induced mutation in the DNA sequence encoding a polypeptide according to any of claims 11 to 14.

5 24. A method of identifying compounds which selectively modulate expression of polypeptides which are crucial for growth and survival of *Candida albicans*, which method comprises:

10 (a) contacting a compound to be tested with one or more *Candida albicans* cells having a mutation in a nucleic acid molecule corresponding to the sequences according to any of claims 1 to 8 which mutation results in overexpression or underexpression of said polypeptides, in addition to contacting one or more wild type *Candida albicans* cells with said compound,

15 (b) monitoring the growth and/or activity of said mutated cell compared to said wild type; wherein differential growth or activity of said one or more mutated *Candida* cells is indicative of selective action of said compound on a polypeptide or another polypeptide in the same or a parallel pathway.

25 25. A compound identifiable according to the method of claim 24.

30 26. A compound according to claim 25 for use as a medicament.

35 27. Use of a compound according to claim 25 in the preparation of a medicament for treating *Candida albicans* associated diseases.

28. A pharmaceutical composition comprising a

compound according to claim 24 together with a pharmaceutically acceptable carrier, diluent or excipient therefor.

5        29. A method of identifying DNA sequences from a cell or organism which DNA encodes polypeptides which are critical for growth or survival of said cell or organism, which method comprises:

10            (a) preparing a cDNA or genomic library from said cell or organism in a suitable expression vector which vector is such that it can either integrate into the genome in said cell or that it permits transcription of antisense RNA from the nucleotide sequences in said cDNA or genomic library,

15            (b) selecting transformants exhibiting impaired growth and determining the nucleotide sequence of the cDNA or genomic sequence from the library included in the vector from said transformant.

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30. A method according to claim 29 wherein said cell or organism is a yeast or filamentous fungi.

25        31. A method according to claim 29 or 30 wherein said cell or organism is any of *Saccharomyces cerevisiae*, *Saccharomyces pombe* or *Candida albicans*.

30        32. Plasmid pGAL1PSiST-1 having the sequence of nucleotides illustrated in Figure 8.

33. Plasmid pGAL1PNIST-1 having the sequence of nucleotides illustrated in Figure 7.

35        34. An antibody capable of binding to a polypeptide according to any of claims 11 to 14.

35. An oligonucleotide comprising a fragment of from 10 to 50 contiguous nucleic acid sequences of a nucleic acid molecule according to any of claims 1 to 10.

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36. A nucleic acid molecule encoding a polypeptide which is critical for survival and growth of the yeast *Candida albicans*, said nucleic acid molecule comprising the sequences of any of the nucleotide sequences 10 illustrated in Figures 9 to 13.

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37. A polypeptide which is critical for survival and growth of the yeast *Candida albicans*, said polypeptide comprising the amino acid sequences of any of the sequences illustrated in Figures 14 or 15.

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38. A method of identifying for the presence of *Candida albicans* in a subject, which method comprises contacting a sample to be tested with nucleic acid molecule according to claim 10 or an antibody according to claim 34, and monitoring for any hybridsation with said molecule or binding to said antibody.

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39. A kit for monitoring *Candida albicans* infection comprising a molecule according to claim 9 or 10, or an antibody according to claim 34, and means for contacting said molecule or said antibody with a sample to be tested.

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40. A nucleic acid molecule encoding a polypeptide which is critical for survival and growth of the yeast *Candida albicans* and which nucleic acid molecule comprises any of the sequences of nucleotides in Sequence ID Numbers 18, 21, 29, 31, 33, 44, 76, 80 and 35 the sequences identified in Figures 9 and 13.